

NON-PUBLIC?: N
ACCESSION #: 9210190438
LICENSEE EVENT REPORT (LER)

FACILITY NAME: Trojan Nuclear Plant PAGE: 1 OF 3

DOCKET NUMBER: 05000344

TITLE: Condensate Pump Trip on Ground Fault Causes Automatic Main
Feedwater Pump Trip and Reactor Trip
EVENT DATE: 09/12/92 LER #: 92-027-00 REPORT DATE: 10/12/92

OTHER FACILITIES INVOLVED: N/A DOCKET NO: 05000

OPERATING MODE: 1 POWER LEVEL: 100

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR
SECTION:
50.73(a)(2)(iv)

LICENSEE CONTACT FOR THIS LER:
NAME: Margaret Megehee, Compliance TELEPHONE: (503) 556-5540
Engineer

COMPONENT FAILURE DESCRIPTION:
CAUSE: B SYSTEM: SD COMPONENT: P MANUFACTURER: E130
REPORTABLE NPRDS: Y

SUPPLEMENTAL REPORT EXPECTED: No

ABSTRACT:

On September 12, 1992, at 1625 hours, the 'B' Condensate Pump and the 'B' Circulating Water Pump tripped on an indicated ground fault. The 'B' Main Feedwater Pump tripped due to the Condensate Pump trip. The Main Turbine load setback circuitry actuated, but was unable to prevent Steam Generator level from decreasing to a low level setpoint. A reactor trip signal was generated by Steam Generator low level coincident with a steam flow/feed flow mismatch. The Engineered Safety Features equipment functioned properly and plant response was normal following the trip.

The 'B' Condensate Pump tripped because of a phase to ground fault in the shielded cable connecting the motor coils to the field cable connection point. This fault caused stresses which resulted in two turn-to-turn failures in two different sets of coil end turns. The Pump motor has been rewound. The other 12 kilovolt motors will be reviewed for

potential similar problems. The Circulating Water Pump motor was tested shortly after the trip. No abnormalities were found, and the pump was restarted on September 13, with no problems encountered.

END OF ABSTRACT

TEXT PAGE 2 OF 3

INTRODUCTION

On September 12, 1992, at approximately 1626 hours, a reactor trip signal occurred following the trip of a Condensate Pump KD-P!, which caused a main Feedwater Pump SJ-P! trip. The required Engineered Safety Features equipment responded properly and plant response was normal following the trip. This event is being reported pursuant to 10 CFR 50.73 (a) (2) (iv) as an event that resulted in automatic actuation of an Engineered Safety Feature.

DESCRIPTION OF EVENT

At approximately 1625 hours on September 12, 1992, with the plant operating in mode 1, Power Operation, at approximately 100 percent rated thermal power, the 'B' Condensate Pump tripped on an indicated ground fault and phase-to-phase overcurrent. The 'B' Circulating Water Pump KE-P! tripped almost simultaneously. The trip of the Condensate Pump caused the 'B' Main Feedwater Pump to trip. The Main Turbine TA-TRB! load was automatically setback due to the Main Feedwater Pump trip.

Steam Generator level decreased, causing a reactor trip signal on low level coincident with a steam flow/feed flow mismatch. The Main Turbine and the 'A' Main Feedwater Pump automatically tripped, and both safety-grade Auxiliary Feedwater Pumps BA-P! automatically started. The Engineered Safety Features equipment performed as designed.

The Control Room operators performed the immediate actions of Emergency Procedure EI-0, "Reactor Trip, Safety Injection, Diagnosis", and transitioned to ES-0.1, "Reactor Trip Response", at 1628 hours. The electric, non-safety auxiliary feedwater pump was started at 1703 hours. The safety grade auxiliary feedwater pumps were secured and were lined up for automatic operation by 1809 hours.

CAUSE OF EVENT

This event occurred due to an equipment failure, a trip of the 'B' Condensate Pump due to a ground fault. The motor failed due to a phase-to-ground fault in the shielded cable connecting the motor coils to

the field cable connection point. This fault caused stresses which resulted in two turn-to-turn failures in two different sets of coil end turns.

A review of the history files for meggering, Polarization Indices, bridging, Electronic Characteristic and Diagnostics (ECAD) and vibration values did not identify any trends indicative of impending failure. This motor was rewound in 1983.

TEXT PAGE 3 OF 3

The ground fault was the result of a short in the cable connecting the motor coils to the field cable termination point. The fault took a path from the conductor through the cable insulation to a concentric neutral copper wire (shield) between the cable outer jacket and the cable insulation. The concentric neutral wires were not stress relieved by use of a stress cone where connected to the motor coils. It is believed that the fault resulted from stresses in the insulation due to the lack of proper cable shield wire termination.

Following the reactor trip, the Circulating Water Pump motor was tested to determine why it tripped shortly after the Condensate Pump tripped. No abnormalities were identified. The motor was restarted at 0027 hours on September 13, 1992, and no subsequent problems were experienced. It is believed that the Circulating Water Pump tripped after the Condensate Pump motor ground fault was sensed on the bus.

The Condensate Pump was manufactured by Electric Products, and is manufacturer Model number SM-1152.

CORRECTIVE ACTIONS

1. The 'B' Condensate Pump Motor was rewound.
2. A review will be conducted on other 12 kilovolt motors to determine if they may have similar shielded lead cable termination deficiencies. Any identified potential problems will be dispositioned appropriately by July 31, 1993.

SAFETY CONSEQUENCES AND IMPLICATIONS

This event had no safety consequences. The Engineered Safety Features equipment responded properly during this event, thereby preventing the development of conditions or unexpected transients that could have significant safety consequences. Plant response to the reactor trip was

normal.

Both component failures described in this event involve equipment that is not safety-related - i. e., the equipment is not required to shut down the reactor and maintain a stable shutdown configuration. Therefore, there are no safety implications resulting from this event.

ADDITIONAL INFORMATION

There have been no recent Engineered Safety Features actuations caused by loss of a Condensate Pump.

ATTACHMENT 1 TO 9210190438 PAGE 1 OF 1

PGE
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(503) 556-3713

October 12, 1992
RDM-521-92

U.S. Nuclear Regulatory Commission
Document Control Desk
Washington DC 20555

Gentlemen:

Licensee Event Report No. 92-027 is attached. This report discusses an event in which a reactor trip occurred due to a Main Feedwater Pump trip, caused by a Condensate Pump trip.

Sincerely,

R. D. Machon
General Manager
Trojan Nuclear Plant

c: Mr. John B. Martin
Regional Administrator, Region V
U.S. Nuclear Regulatory Commission

Mr. David Stewart-Smith
State of Oregon

Department of Energy

Mr. R. C. Barr
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